A committee is now sitting somewhere in India to decide on the best method of increasing the efficiency of the Indian survey department from the point of view (amongst others) of the English expert. It may be doubted whether the Indian surveyor has much to learn from the English expert, excepting in the science of map reproduction; but it may be that the Indian financier will learn therefrom that the way to improve and develop a department is not to starve it under the pressure of each successive spasm of financial depression but to give consistent support to its work in the field and encourage the publication of such results as are of world-wide interest. Compare this half-starved production with the survey reports of North America, of Canada, of any Continental country, or even with the intermittent publications of South America, and it would really appear as if India offered no field for scientific research that was worth a descriptive record. The report is unworthy of the Government of India.

There is apparently but one triangulation party now existing in India which works on geodetic principles, and this is gradually pushing its network of triangles through Burma, giving a good basis for two topographical surveys to extend their minor triangulations and lay out a framework for detailed mapping. Only these two topographical parties figure in the report, and the narrative of their progress is confined to the dullest of all dull statistics. Yet one of them is working in the Shan States on the Chinese frontier, where, if anywhere in the eastern world, there must be a most delightful field for new experiences and original observation.

Of geographical exploration on or beyond the Indian frontier, or of scientific investigations in the Himalayas, there is not a word in the report; nor, for that matter, is there the faintest reference to the solid work of the revenue and forest surveys which are spread in more prosaic form over half the continent. Possibly there may be much of really stirring narrative rendered by the officers concerned in trans-frontier work to which it is not deemed well to make any allusion. This is comprehensible on the grounds of political prudence, but the worst feature of this form of suppression is that it is apt to be permanent. A report once pigeon-holed in an Indian office might almost as well be solemnly committed to the earth with a spade. The man who wrote it, and who knew what he wrote about, leaves India at the mature age of fifty-five, and thereafter has nothing further to say to it. His opinion is never consulted, and it becomes merely a matter of academic interest to him to watch a new generation of frontier administrators floundering along by the light of experiences gained, let us say, in South Africa or in Egypt. He faintly wonders what has become of all the detailed information of the Indian frontier gathered in his time at the cost of so much labour and expense.

There is, however, doubtless much to be learnt from the series of tidal, levelling, and magnetic tables which take up nearly fifty of the eighty pages of the report, although it is not easy to recognise their claim to be considered narrative. Presumably these tables are published for the benefit of the comparatively few men of science who are interested in these special classes of investigation, but they hardly seem to justify the title of the report, and should certainly be preserved (as they probably are) in other forms more readily accessible for purposes of reference.

There is an account of a local survey (including levelling operations) which was undertaken for the benefit of the salt revenue department in order to ascertain the source of the Sambhar Salt Lake water supply. The result of the investigation would have been interesting had it been stated. The lake was surveyed thirty-eight years ago, and the source of supply carefully examined then. Probably the report was pigeon-holed.

It would be pleasant to congratulate Colonel Longe on the success of his first administrative report as Surveyor-General of India, but, as a matter of fact, it is obvious that hardly even the skirts of narrative have been touched so far as the Survey of India is concerned, and we can only hope that there may be another and a more comprehensive report issued hereafter in some other form. T. H. H.

NOTES.

It cannot be too often emphasised that Japan owes its triumphs chiefly to the adoption of the scientific spirit as the essential principle of national progress. The State that accepts this axiom of practical politics secures for itself a place among leading nations; while, on the other hand, the country that gives little or no encouragement to science must fall behind in the future. The Paris correspondent of the *Times* states that this view is taken by M. Ludovic Naudeau, who, in the course of a telegram from Tokio on the causes of the Russian defeat, remarks:—"It is now idle to attempt to hide the fact that never was the Russian lack of science, of the modern spirit, or, to speak frankly, of intelligence—never was the absence of training and of enthusiasm which retards the efforts of the whole Empire displayed in a more melancholy fashion than in the Sea of Japan. All the Russian inferiority is in the intellectual sphere." We understand that even in the midst of the war, the subject of education is being keenly discussed in Japan. In our own country it is necessary to urge that satisfactory provision for the future can only be made by taking a wide view of scientific education, and by insisting that all who have the affairs of State under their control should possess such a knowledge of the methods of science as will enable them to understand that the most potent factors of success in the arts of peace or of war are scientific education and research.

Under the name of the Potentia Organisation, an international association has been formed with the object of establishing among nations a mutual relationship and cooperation for the diffusion of accurate information and unbiased opinion concerning international events and movements, and to combat narrow, prejudiced, and often interested views and news that contribute so much to international mistrust and misunderstanding. It is proposed to publish throughout the world, through the medium of newspapers and reviews, statements of simple fact and expressions of opinion by eminent public men of all nations on all important political, social, philosophical, economic, scientific, and artistic questions, to present the sincere views of experts on all current international events, and to refute false or biased news and views calculated to spread error and to endanger the peace and progress of the world. A cosmopolitan alliance of this kind should meet with many adherents in the world of science, in which the sole aims are the discovery of truth and the extension of natural knowledge. We trust that the organisation will do something to show that scientific culture is at the foundation of all national progress.

Mr. Stanley Gardiner, leader of the Sladen Trust Expedition for the exploration of the Indian Ocean between Ceylon and the Seychelles in H.M.S. *Sealark*, has sent Prof. Herdman a letter from Colombo (May 7) in which he gives the following provisional programme:—Leave

Colombo May 8, arrive Chagos Archipelago about May 20, and work there until about July 15; arrive Mauritius about August 1, and stay until about August 15; arrive Seychelles about September 8, leave about September 15, and return there on October 15 after visiting the various Amirante Islands. A second steam-launch has been acquired, and Mr. Stanley Gardiner considers that he is now fully equipped for work. The expedition will probably be next heard of from Peros Banhos, which ought to be reached early in June.

A REUTER telegram of June 1 states that a severe earthquake shock was felt in the morning of that day throughout the whole of Montenegro.

WE regret to see the announcement of the death of Mrs. Emma Hubbard, who at various times contributed to our correspondence columns interesting observations on natural history, more particularly on the subject of birds and their ways. Mrs. Hubbard also did useful service to science by indexing scientific works, among them being Sir Michael Foster's "Physiology" and her brother's "Ancient Stone Implements."

THE first International Congress of Anatomists will be held at Geneva, Switzerland, on August 7 to 10. The following national societies are to participate in this congress:—the Anatomical Society of Great Britain, the Anatomische Gesellschaft, the Association des Anatomistes, the Association of American Anatomists, and the Unione Zoologica Italiana. The organisation of the congress has been entrusted to a committee representing these societies, and consisting of Profs. Minot, Nicolas, Romiti, Symington, and Waldeyer. The presidents thus far named are Prof. Sabatier, of Montpellier; Prof. Romiti, of Pisa; and Prof. Minot, of Harvard. The congress owes its successful initiation largely to Prof. Nicolas, of the University of Nancy, to whom inquiries may be addressed.

ON June 1 the Prince of Wales paid a private visit to the Cotton Exhibition at the Imperial Institute, which is being held by the Board of Trade in conjunction with the British Cotton-growing Association. The exhibition, which has been arranged by the scientific staff of the Imperial Institute under the direction of Prof. Wyndham Dunstan, F.R.S., in consultation with Sir Alfred Bateman and Sir Cecil Clementi-Smith, the managing committee of the institute, is intended to show not only the progress of cotton cultivation on British soil, but also to indicate the stages in the conversion of the raw material into the manufactured fabric. Bulk samples of commercial cottons grown in different parts of the Empire are supplemented with small specimens arranged to show the length of staple, and are accompanied by photographs of cotton fields, ginneries, &c., and statistical diagrams and maps. The British Cotton-growing Association, in addition to their raw cottons, exhibit a unique collection of native textiles. The machinery section includes models of Arkwright's machines, a power-loom in operation, and several testing machines. Manufacturing processes are illustrated by specimens and explained by means of diagrams, and samples of goods produced by special processes, including the making of "selvyt," are on view.

THE weather report issued by the Meteorological Office for the week ended on June 3 showed that the rainfall since the beginning of the year had only exceeded the average in the north of Scotland (excess 5·4 inches) and in the north of Ireland (excess 0·8 inch). The greatest deficiency was in north-east England (3·2 inches) and in the midland and southern counties (2 to 2·6 inches). The heavy downpours in the early part of this week will have contributed something towards making up the deficiency, especially in the eastern and southern parts of the kingdom. The *Daily Weather Report* of Monday last showed a great change in the distribution of barometric pressure, there being a steady increase over the northern and north-western districts, and a shallow depression having formed over France. During the twenty-four hours ending at 8h. a.m. on Tuesday, the rainfall was continuous and heavy over the south and south-east of England, amounting to nearly 2 inches at Dungeness, 1·5 inches at Clacton-on-Sea, and to an inch in London, the rain still continuing, practically without cessation, during the whole of Tuesday. The heaviest falls reported for the twenty-four hours ending 8h. a.m. on Wednesday were 0.57 inch in London and nearly half an inch at Oxford and Bath.

THE *Engineering and Mining Journal* records that payable ore has been reached at the New Chum Railway Mine, at Bendigo, Victoria, at a depth of 4262 feet. This is the greatest depth at which gold mining has been carried on. It has, however, been exceeded at the Lake Superior copper mines.

THE plans have been completed for the fifteen-story building, to cost 195,000*l*., which Mr. Andrew Carnegie is to present to the engineering societies of New York. Adjoining it in the rear will be a thirteen-story house for the Engineers' Club, which is to cost an additional 75,000*l*., and is also part of Mr. Carnegie's gift.

IN the *Engineer* there is a long and interesting description of the instructive case of models showing the construction of the leading types of expansion and plain slide-valves lately placed on view in the Victoria and Albert Museum. The collection forms a complete record of the progress made in this important branch of steam engineering.

IT is reported in *Engineering* that the world's copper production in 1904 amounted to 613,125 tons, the United States furnishing more than half the total. Great things in the way of copper production are expected from Alaska, where development is being carried on rapidly, especially in Tanana County. In the same journal, attention is directed to an important discovery of tin ore in the Vlaglaagte district of the Transvaal. The world's sources of tin supply are so few that interest must always attach to reported new finds.

WE have received a copy of a paper reprinted from the *Transactions of the Institution of Mining Engineers,* read on January 10, by Mr. James Ashworth, on outbursts of gas and coal at the Morrissey collieries, in the Crow's Nest Pass Coalfield, British Columbia. A huge outburst on November 18, 1904, caused the death of fourteen miners, and it is estimated that some 3,000,000 cubic feet of gas, at atmospheric pressure, were set free by the outburst in thirty-five minutes. Mr. Ashworth suggests that these unusually large outbursts may have some connection with the petroleum occurring in the district.

AT the forty-second general meeting of the Institution of Mining Engineers, held in London on June 2 and 3, several interesting papers were read. Mr. T. Y. Greener dealt with the firing of boilers by waste heat from coke ovens. Mr. M. R. Kirby described the compound winding engine at Lumpsey iron mine. Its steam consumption is only 38 lb. to 40 lb. per indicated horse-power hour. Mr. F. Hird gave the results of tests of the electric winding engine at Friedrichshall, and Mr. E. Lozé described electric winding engines installed at French collieries. Mining education in the United States was discussed by Prof. H. Eckfeldt, and in New Zealand by Prof. J. Park. Coal mining in India was dealt with by Mr. T. Adamson. Mr. J. Jeffries described the occurrence of underground fires at the Greta colliery, New South Wales. Mr. W. C. Blackett and Mr. R. G. Ware described a striking innovation in mining practice, the use of electrically driven mechanical conveyors for filling at the coal-face. Two years' experience has shown a saving of 48 per cent. over the ordinary pick and shovel method. Lastly, Mr. A. R. Sawyer gave an account of the geology of Chunies Poort, Zoutpansberg, Transvaal. Incidentally, he mentioned some old copper workings where native copper occurs in some abundance in dolomite. The proceedings terminated with a vote of thanks, proposed by Mr. Bennett H. Brough, to the Geological Society and to the Royal Astronomical Society for the use of their rooms for the meeting.

IN the *Biologisches Centralblatt* of May 15 Dr. O. Zacharias brings to a conclusion his article on the relations of modern hydrobiology to fish culture and fisheries. Dr. G. Schneider also discusses the origin of species among cestode worms. He concludes that morphological variation in union with biological isolation through parasitism are insufficient to form species unless aided by physiological, that is, sexual, isolation.

IN the *Nouveaux Mémoires* of the Moscow Academy, vol. xvi., parts ii. and iv., the well known Russian ornithologist, Dr. P. Suschkin, commences an important work on the osteology of the avian skeleton, the second part, which is alone before us, dealing with the osteology and classification of the diurnal birds of prey (Accipitres). This part is illustrated with four plates of various parts of the skeleton.

DURING a recent visit to the Victoria Falls of the Zambezi, Mr. W. L. Sclater, director of the South African Museum, obtained three fishes from that river which were sent to the British Museum for examination. One of these proved to be new, and is described by Mr. G. A. Boulenger in vol. iii., part vii., of the *Annals of the South African Museum* under the name of *Paratilapia carlottae.* The genus is widely spread.

WE have received from the author, Mr. C. C. Hurst, a copy of his paper on experimental studies on heredity in rabbits, published in vol. xxix. of the *Journal of the Linnean Society.* The experiments were commenced in 1902, with the object of ascertaining whether the Mendelian principles of heredity were applicable to animals as well as plants, the animals selected being the white Angora rabbit and the Belgian hare. The results confirm, and extend to rabbits, those already obtained by Prof. Cuénot in the case of mice, though it would appear that the heredity of Dutch markings in rabbits differs in some respects from that of the "panachure" in mice.

IN the *Zoologist* for May, Mr. J. H. Gurney records the early history of a young cuckoo. On May 22 last year a hedge-sparrow's nest was found containing three eggs laid by the owner, and one egg deposited by a cuckoo. The cuckoo's egg was of the ordinary brown type, presenting no resemblance to the hedge-sparrow's eggs. On June 2 the young cuckoo and two hedge-sparrows were hatched, the third young hedge-sparrow, which had been hatched earlier, having previously disappeared. The next day the two nestling hedge-sparrows were found lying dead outside the nest. When one was replaced, no attempt was made to eject it by the cuckoo. The same result happened when a young wagtail was put into the nest; but when this was replaced by a young wren, the latter was ejected under the eyes of the observer in the usual manner. On June 22 the young cuckoo left the nest.

IN discussing certain habits of British bats in the eighth article of vol. xlix. of the *Memoirs of the Manchester Literary and Philosophical Society,* Mr. C. Oldham refers in the first place to the winter sleep, and points out that, from observations made in the disused copper mines of Alderley Edge, in the case of the long-eared bat this sleep is interrupted, the bats probably feeding at intervals on the insects which abound in the tunnels in winter, even if they do not venture forth into the open. The same is probably true of Daubenton's bat, the whiskered bat, and the lesser horse-shoe bat. There appears to be nothing to show that the bats occasionally seen abroad on mild days in winter are pipistrelles. Two popular fallacies are contradicted, firstly, that bats cannot walk, or can only shuffle awkwardly, along a flat surface, and secondly, that they cannot take flight from such a surface. The different postures assumed by British bats in repose form the subject of the plate illustrating Mr. Oldham's paper. The lesser horse-shoe bat, of which one of the figures is reproduced, recalls the posture assumed by the fox-bats, or flying-foxes, when at rest. The posture of ordinary bats is quite different, and it is a curious fact that while the lesser horse-shoe alights from the air in an inverted position, other bats, on first coming to rest, do so with the head upwards, and then reverse their position.

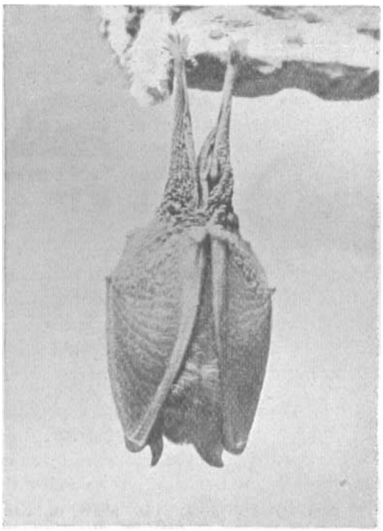

FIG. 1.—Lesser Horseshoe Bat in Repose.

THE foregoing paper is supplemented by the observations of Mr. C. B. Moffat on the duration of flight among bats, published in the May number of the *Irish Naturalist.* In this communication it is shown that while the long-eared bat and the pipistrelle are all-night fliers, the hairy-armed bat only ventures forth for a short flight in the evening, and again shortly before dawn. The hairy-armed bat thus enjoys a daily rest of 21½ hours, taking all its exercise and its food in two periods (which in summer may be very close together) of one and a quarter hours each. There is a suggestion that the great bat, or noctule, indulges only in an evening flight, but additional evidence is required before this can be definitely accepted, and it appears to be contradicted by certain observations which the author did not see soon enough to incorporate in his text.

No. 1402 (vol. xxviii.), pp. 425–460, of the *Proceedings of the U.S. National Museum* contains descriptions by Mr. E. A. Mearns of new mammals from the Philippine Islands. The most interesting of these is a new genus of insectivore represented by *Podogymnura truei*. It is allied to Gymnura and Hylomys, and has a long hind-foot and a stout tail rather more than a third the length of head and body. Two tupaias are likewise referred to a new genus, Urogale, one of these having been previously described by Mr. O. Thomas as *Tupaia everetti*. They are characterised by the round tail. Several new genera of rats are likewise described, for one of which the author proposes the name Bullimus, a term, in our opinion, too like the familiar Bulimus. In vol. i., No. 6, of the *Bulletin of the Brooklyn Institute*, Dr. J. A. Allen describes a collection of mammals from Beaver County, Utah. Copies of three other American papers have been received during the current week. In the first, *Bulletin of the Brooklyn Institute*, vol. i., No. 6, Mr. C. Schaeffer records additions to the beetle fauna of the United States, with notes on some previously known species. In the second, *Proceedings of the U.S. National Museum*, No. 1400, Miss Richardson describes two new isopod crustaceans from California. In the third, *op. cit.* No. 1401, Mr. T. W. Vaughan gives a critical review of the genera of the fungoid corals, with a tentative classification.

WHEN the "Book of Antelopes" was concluded in 1900 the authors were unable to give any satisfactory account of Heuglin's "giant eland" of the Bahr-el-Ghazal from the want of accessible specimens. Heuglin had described it in 1863, but had based his description on a single pair of horns, and Schweinfurth, who had subsequently met with the same animal in Bongoland, had given very little further information about it except that it had stripes on its body. In these circumstances Messrs. Sclater and Thomas classed the giant eland of Central Africa as a subspecies of the common eland (*Taurotragus oryx*) under the name *Taurotragus oryx gigas* ("Book of Antelopes," iv., p. 208). This splendid animal, which may be fairly called "the grandest of all the African antelopes," has lately been re-discovered by Mr. A. L. Butler, the superintendent of game preservation in the Anglo-Egyptian Sudan, who communicated a full description of it to the Zoological Society at a recent meeting. It appears, from the evidence given by Mr. Butler, that its nearest ally is the Derbian eland (*Taurotragus derbianus*) of Senegal, and not the typical *T. oryx*, and he therefore proposes to call it *Taurotragus derbianus gigas* instead of *T. oryx gigas*. This is probably correct, as the description given by Mr. Butler agrees very fairly in most points with the Derbian eland. But the giant eland appears to be a still larger and finer animal, with much stronger horns; its height at the withers is stated to be 68 inches. On this question we may shortly have an opportunity of forming an opinion, as Bimbashi Collins, of the Egyptian Army, who has himself shot two specimens of the animal, has sent the heads and skins to Mr. Butler to be forwarded to England, where they will probably go to the Natural History Museum at South Kensington.

THE question of the sleep of fishes was referred to (p. 104) last week in our notice of the last volume of the "Cambridge Natural History." Mr. F. Davis, writing from 49 and 51 Imperial Buildings, Ludgate Circus, E.C., says that observations of many varieties kept by him in aquaria extending over a period of twenty years show that fishes do sleep. He has also observed what appeared to be the play or sports of fishes, which probably serves the same biological ends as in the higher vertebrates. He remarks:—"Apparently when kept in aquaria fishes only sleep during the hours of darkness. If an artificial light be thrown upon them they quickly regain consciousness."

WE have received the annual report for 1903 of the Government bacteriologist and director of the laboratory (Mr. H. Watkins-Pitchford), Pietermaritzburg, showing that much good work is being done in the colony. It contains a valuable bacteriological report on the plague in Natal in 1902–3.

THE "Nervous Diseases Research Fund" has just issued its first annual report. The object of the fund is to promote and carry on research into the origin and cure of diseases of the nervous system. The work is carried on at the National Hospital, Queen's Square, W.C., and is under the direct supervision of the medical staff of the hospital. During 1904, forty-eight autopsies were performed and the pathological condition investigated. Special attention has been directed to the study of a disease known as myasthenia gravis, which is almost invariably fatal, and about which little is known at present.

THE development of lenticels at points where the stress is small is discussed by Mr. J. A. Terras in an article in the *Transactions and Proceedings of the Botanical Society of Edinburgh* (vol. xxii., part iv.), and the origin of lenticels on roots is described in some detail. A first account of new species of flowering plants from the Republic of Colombia, mostly collected by the writer, who accompanied Captain Dowding's expedition in 1898–9, is contributed by Mr. T. A. Sprague to the same number.

A RECENT leaflet issued by the Board of Agriculture and Fisheries furnishes an account of the life-history of the pine sawfly, *Lophyrus pini*, which attacks more especially the Scots pine and the black Austrian pine. Two broods develop in the year, the first in May and the second in August. The larvæ are the source of damage, as they devour the pine needles. Amongst the animals which feed on the larvæ are mice, squirrels, goatsuckers, and starlings, also numerous ichneumon flies. In plantations the best remedy is to kill the larvæ by hand, but as a spray for ornamental trees in parks and gardens, hellebore essence or arsenate of lead is recommended.

ALTHOUGH the investigation of the gametophytes and embryo of the gymnospermous genus Torreya has not yielded the critical results which had been expected, several interesting taxonomic characters were observed by Dr. J. M. Coulter and Mr. W. J. G. Land, and are described in their account of *Torreya taxifolia* in the *Botanical Gazette* (March). The archegonium initial is differentiated very early, while most of the endosperm develops after fertilisation. A pro-embryo of twelve to eighteen cells completely fills the egg and persists through the winter, until in the spring the suspensor elongates, and later the ruminated appearance of the endosperm becomes apparent. Rumination is shown to be due to the unequal resistance offered by the perisperm in different parts of the seed to the encroaching endosperm.

THE report of the Meteorological Commission of Cape Colony for the half-year ending June 30, 1904, has been received. The usual tables of rainfall, temperature, &c., at various stations will not be published until the issue of the next half-yearly report, so that the data may be comparable with the information contained in previous yearly reports. But in lieu of the usual tables above referred to, the present issue contains a very valuable series of twenty-three tables prepared by the secretary (Mr. C. M. Stewart) showing the characteristic features of the winds at the Cape Observatory during the five years 1896–1900, arranged under sixteen points of the compass, and referred to various elements, *e.g.* temperature, humidity, &c., and giving the percentage of relative wind-frequency and wind-force at various hours.

We have received a copy of the report of the director of the Philippine Weather Bureau for the year ending August 31, 1904 (reprinted from the report of the Philippine Commission, part ii.). We have frequently had occasion to refer to the useful work of this organisation, and the valuable researches and publications of the Rev. J. Algué, S.J., particularly in respect of the cyclones in the Far East. The central office performs a large amount of work gratuitously for observers on land and sea, by adjusting and comparing instruments; this is generally only known to those benefited. The director states that the weather bureau is never closed; the chief officials live at the observatory, and are ready to attend any call at all hours, especially inquiries by officers of ships, if they wish for information as to the conditions of weather. In addition to the regular work, telegrams are constantly exchanged between the provinces, China, Formosa, and Japan, and when bad weather is impending special warnings are dispatched to the points threatened.

The annual summary of the Monthly Weather Review of the U.S. Weather Bureau for 1904, containing a useful subject, author, and title index of the papers published in the monthly parts, and an annual climatological summary of the observations made at the Weather Bureau stations, has just reached us. Weather forecasts for thirty-six and forty-eight hours in advance have been made daily throughout the year for each State, and special warnings of gales on the sea coasts have been issued when necessary. In a number of instances, the chief of the Weather Bureau states, European shipping interests were notified of the character and probable course of severe storms that were passing eastward from the American coast. The warnings and indications of the movements of West India hurricanes have evidently been the means of saving a large amount of property and a number of lives, and their value has been acknowledged by the Press, and also by the President of the Jacksonville Board of Trade, who states that the warnings to vessels not to leave port prevented serious disasters. Prof. W. L. Moore expresses the hope that the time will come when it will be possible to forecast the weather generally for coming seasons, but that time has not yet arrived. Valuable researches are being made at Mount Weather Observatory, Virginia, where it is proposed, *inter alia,* to discuss meteorological observations from the point of view of their relations to solar physics, and to select meteorological and magnetic elements and compare them with solar observations.

In the current number of the *Comptes rendus* of the Paris Academy of Sciences M. Guyou gives an interesting account of the utilisation of the telephone system for the exact transmission of time. The experiments were undertaken by the Observatory of the Bureau des Longitudes at the request of the Chambre syndicale de l'Horlogerie, and after a preliminary trial in the Paris area were extended to the whole French system. The transmission of the time by a verbal signal not being sufficiently exact for the purpose, by means of a specially arranged microphone each beat of the pendulum of the standard clock in the observatory could be heard in the telephone receiver, the operator at the sending end merely counting one or two beats. On May 25 the destroyer *Escopette,* whilst at Brest, was able to regulate its chronometers directly against the standard clock of the Observatory of Montsouris with an accuracy of about 0·1 to 0·2 second. As M. Guyou points out, owing to the wide extent of the telephone system at the present time, this mode of transmitting the time ought to be of considerable service.

In *Kungl. Svenska Vetensk. Akad. Handl.* (Band 38, No. 5) Dr. Hasselberg gives the results of an investigation of the arc spectrum of tungsten. The region he has studied extends from λ 3477 to λ 5892. This is a continuation of the very useful series of publications by the same spectroscopist relating to the arc spectra of metals. The elimination of lines due to impurities was done by comparing the tungsten spectrum with those of other metals taken under similar conditions. In cases of close agreement between tungsten lines and those of other metals a special study was made of the lines with the object of establishing their coincidence or non-coincidence, and in the former case the probable origin of the common line was determined from a consideration of the relative intensities in the two spectra. In a comparison column are given the lines recorded by Messrs. Exner and Haschek for the same element. The strongest lines of this metal have been carefully compared with the Fraunhoferic lines, and cases of coincidence and probable identity noted.

In our issue of July 28, 1904, we noted that Dr. H. M. Reese, of Yerkes Observatory, had published the results of some observations of "enhanced" lines in the Fe, Ti, and Ni spectra, wherein he supposed that he had discovered some enhanced lines not included in Sir Norman Lockyer's lists. In the current number of the *Astrophysical Journal* Mr. F. E. Baxandall comments on Dr. Reese's results, and shows that in a great number of cases there is no evidence of enhancement in the Kensington photographs. For example, the comparative tables given show for each element that of the seventy enhanced lines discovered by Dr. Reese for iron, fifteen are actually stronger in the arc than in the spark spectrum, twenty-five are equally strong in both spectra, twenty do not occur in either spectra on the Kensington grating spectrograms, whilst six are so slightly "enhanced" as to leave it doubtful as to whether they should be included in this category. It seems probable that Dr. Reese was misled by comparing two spectra of which the spark was generally the stronger, for he especially remarked that only one line was stronger in his arc than in his spark spectrum.

We have received from the Bureau of Mines of Ontario an interesting memoir on the limestones of the province by Mr. Willet G. Miller, the provincial geologist. It covers 143 pages, and contains a number of excellent photographs of the principal quarries. It shows clearly where limestones of various chemical compositions are to be found, and gives a concise account of the uses of limestone and lime at the present time. Hitherto it has hardly been realised that limestones form an important part of the mineral resources of Ontario, and this well arranged collection of analyses of limestone and of descriptions of quarries cannot fail to prove of value to all interested in the important industries that depend upon limestone as a base.

Messrs. Iliffe and Sons, Ltd., have published a little book on practical frame-making by Colonel W. L. Noverre; the price is 1*s.* net.